

# HUFFPOST GREEN

Jim Lauria

*Vice President of Marketing and Business Development for Amiad Filtration Systems*

## The Emotion of Wastewater

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I'm at the [American Water Works Association](#) conference in Washington, DC, this week, and was asked to nominate a water project for a LinkedIn water professionals' group list of the world's top water projects. As far as I'm concerned, there's one project that leads them all -- the Singapore Public Utilities Board's [NEWater](#), 2007 winner of the prestigious [Stockholm Industry Water Award](#).

In fact, being in our nation's capital naturally has me thinking in terms of lawmakers -- and I sincerely hope our regulators and legislators take a few pages from Singapore's playbook. That tiny city-state has become a global leader in wastewater recycling. It's now a hub for technology leaders like Siemens, Black & Veatch and C2HM Hill. But what's more exciting is that Singapore is a living demonstration of the best in wastewater reuse technology, meeting 30% of the nation's water needs through recycling -- more than 200 million gallons per day.

They're doing so many things right, starting with recognizing that wastewater is a valuable resource and continuing to teach residents that treated wastewater is healthy, useful and good for the environment.

The NEWater project spans five wastewater treatment plants -- and a history dating back to PUB's first wastewater-to-potable-water pilot plant in 1974 -- that harness state-of-the-art technology to replicate Mother Nature's ability to recycle wastewater. Just as dirty water percolates into the soil (a massive filter), is exposed to countless microbes in the earth (extensive bioreaction), rises through streambeds (where it is aerated), evaporates and returns to the earth as clean rain droplets, NEWater undergoes multi-stage treatment on its path back to purity.

Effluent enters a NEWater plant and is progressively stripped of contaminants as it runs a gauntlet from woven mesh screens to microfiltration membranes to reverse osmosis membranes - - whose pores are so tiny that even viruses and metal ions can't pass through. Ultraviolet light and hydrogen peroxide provide disinfection that kills the last of the pathogens, and the water is substantially purer than Singapore's traditional sources of drinking water. Fewer bacteria and organics, better clarity, better color -- improvements all the way around.

In fact, NEWater is so pristine that it's actually preferred by local semiconductor wafer manufacturers, who need water of exceptional purity in their manufacturing process.

But there's more to Singapore's success with NEWater than technology... or even clean water. What's truly remarkable is that Singaporeans are excited about their water recycling. Through loud and clear communications -- the figure "65,000 scientific tests" comes up a lot -- Singapore PUB has eliminated "the yuck factor" that has sunk wastewater recycling proposals in such water-stressed areas as [Los Angeles, Calif.](#), and [Toowoomba, NSW](#), where the battle has raged since 2006, and stalled implementation of [San Diego's water recycling program](#), which is now in a demonstration phase.

The "yuck factor" is understandable, especially when people insist on putting the word "toilet" next to the word "tap." The idea of treating wastewater sounds creepy to many folks... especially when they conveniently forget that their municipal water system intakes are more than likely downstream from some other towns' treated sewer outflows.

What Singapore PUB did was demonstrate its technology. It handed out millions of bottles of NEWater. It built a visitors center with hands-on, high-tech displays and invited the public to see what water recycling really is.

A visitors center. Did you ever think 800,000 people would visit a wastewater treatment plant?

In [The Big Thirst](#), author Charles Fishman notes, "When water becomes a crisis, it often ends up being about emotion as much as science or rational policymaking." The folks in Toowoomba and LA got tied up in the negative emotions surrounding phrases like "toilet to tap."

What we need to do is get swept up in the emotions that really ought to spring from realizing that recycling our wastewater multiplies our water supply. What emotions are those? Relief? Liberation? The kind of joy that accompanies the first splashes of rain after a parching drought? Those certainly seem most appropriate.

Wastewater recycling is starting to take hold in the U.S. -- mostly in industrial contexts, though some areas in Florida, California and Nevada are irrigating golf courses and crops with recycled water. Half of the irrigation water that nourishes Israel's lush farms is recycled water. Now, Singapore is pumping recycled water to the next level -- bringing it all the way around to where it started.

I became aware of NEWater when I learned about how Singapore PUB uses my company's filters as part of its multi-stage water purification process. And the emotion I feel is pride -- delighted to be part of a system that is turning what used to be considered waste back into the vital resource it really is.